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His love for painting must have been enthusiastic, for we have ourselves seen nearly thirty portraits of his hand. They are chiefly of his own family, or of distinguished persons with whom he was intimate; as among the former, two of his father, (one very admirable,) and one of his mother; and among the latter, Sandcroft Archbishop of Canterbury; Tillotson; Hoff Bishop of Winchester; Narcissus Marsh; the Duke of Tyrconnell; Lord Capel, &c. &c. We believe they are now in the appropriate keeping of the worthy Dean of St. Patrick's, and they could not possibly be in better hands.

Bishop Digby was also a lover of planting and gardening. The trees at Abbert—the seat of Mr. Blakeney, in the county of Galway—the finest timber now in that county, were of his planting. We have wandered in the shade of their luxuriant masses, eating delicious fruit from the garden he planted, but these enjoyments did not excite in our mind so grateful a regard for his memory as his attachment to that delightful art, of which we are ourselves sincere, though humble lovers.

REVIEWS OF BOOKS.

Library of Entertaining Knowledge. Vol. VI. Part I. *Insect Transformations*—London. Knight.

At the conclusion of the volume on *Insect Architecture*, we were advertised of the speedy appearance of the present work. It is done by the same clever hand. The voluminous, expensive, and sometimes inaccessible treatises, ancient and modern, foreign and domestic, of writers who have been distinguished for their investigations in this branch of natural history, have been laid under contribution, their frequently conflicting statements reconciled, and numerous original observations added by the ability of Mr. Rennie. We have here an account of the origin, structure, and habits of the insect tribes, conveyed in the most simple and intelligible form. The part is divided into two sections—the first treating of the eggs of insects—the second, of the larvæ; and we presume the portion of the volume which is yet to be published, will contain two sections more on insects in the Pupa and Imago state. How the author could have so well contrived to treat of the architecture of insects, without first presenting his readers with an account of their transformations, is to us, we must confess, somewhat surprising: it is certainly highly creditable to his ingenuity, and his tact for conveying instruction in a seductive train. At all events, those who have read his former volume will, we doubt not, re-peruse it with special pleasure, after they have made themselves acquainted with the present one; whilst those who have, as yet, read neither, would, perhaps, do well to begin with the transformations, and thence proceed to the architecture. In both combined, we have the most clear, comprehensive, interesting and economical natural history of insects that has ever been given to the public.

In the opening chapter, we find the vulgar errors of the origin of insects from putrefaction, and other ill-conceived sources, amply exposed. It is clearly shown that all those fanciful theories originate in the endeavours of human ingenuity to trace the operations of nature farther than ascertained facts will warrant; and that

the necessary blanks in such a system, which presupposes much that cannot be explained, are filled up by the imagination. This inability to trace the origin of minute plants and insects, led to the doctrine of what is called *spontaneous generation*, of which those fancies are some of the prominent branches.

“The experiments of Redi on the hatching of insects from eggs, which were published at Florence in 1668, first brought discredit upon this doctrine, though it had always a few eminent disciples. At present, it is maintained by a considerable number of distinguished naturalists, such as Blumenbach, Cuvier, Bory de St. Vincent, R. Brown, &c. ‘The notion of spontaneous generation,’ says Bory, ‘is at first revolting to a rational mind; but it is, notwithstanding, defensible by the microscope. The fact is avowed: Müller has seen it, I have seen it, and twenty other observers have seen it: the pandorinia exhibit it every instant.’ These pandorinia he elsewhere describes as, probably, nothing more than ‘animated scions of zoocarpæ.’ It would be unprofitable to go into any lengthened discussion upon this mysterious subject; and we have great doubts whether the ocular demonstration by the microscope, would succeed, except in the hands of a disciple of the school. Even with naturalists, whose business it is to deal with facts, the reason is often wonderfully influenced by the imagination. But the question immediately before us, happily does not involve those recondite discussions; for if even pandorinia and other animalcules were proved, beyond a doubt, to originate in the play of chemical affinities or galvanic actions—(a more refined process, it must be confessed, than Kircher’s chopped snakes,) it would not affect our doctrine, that all insects are hatched from eggs: for no naturalist, of the present day, classes such animalcules among insects. Leaving animalcules and zoophytes, therefore, out of the question, we have only to examine such branches of the theory of spontaneous generation as seem to involve the propagation of genuine insects; like the fancies about putrefaction, which we have seen refuted. The notion that small insects, such as aphides and the leaf-rolling caterpillars, are spread about, or rather generated, by what is termed *blight* (possibly from the Belgic, *blinkan*, to strike with lightning,) is almost universally believed, even by the most intelligent, if they have not particularly studied the habits of insects. Mr. Main, of Chelsea, an ingenious and well informed gardener and naturalist, describes this as an ‘east-erly wind, attended by a blue mist. The latter is called a blight, and many people imagine that the aphides are wafted through the air by the same mist.’ ‘The farmer,’ says Keith, ‘supposes these insects are wafted to him on the east wind, while they are only generated in the extravasated juices, as forming a proper nidus for their eggs.’ A more detailed account, however, is given by the late Dr. Mason Good, and as he speaks, in part, from personal observation, and was not only one of the most learned men of his time, but an excellent general naturalist, his testimony merits every attention:—‘That the atmosphere,’ says Dr. Good, ‘is freighted with myriads of insect eggs that elude our senses, and that such eggs, when they meet with a proper bed, are hatched in a few hours into a perfect form, is clear to any one who has attended to the rapid and wonderful effects of what, in common language, is

called a blight upon plantations and gardens. I have seen, as probably many who read this work have also, a hop-ground completely overrun and desolated by the *aphis humuli*, or hop green louse, within twelve hours after a honey-dew (which is a peculiar haze or mist loaded with poisonous miasm) has slowly swept through the plantation, and stimulated the leaves of the hop to the morbid secretion of a saccharine and viscid juice, which, while it destroys the young shoots by exhaustion, renders them a favourite resort for this insect, and a cherishing nidus for myriads of little dots that are its eggs. The latter are hatched within eight and forty hours after their deposit, and succeeded by hosts of other eggs of the same kind; or, if the blight take place in the early part of the autumn, by hosts of the young insects produced viviparously; for, in different seasons of the year, the *aphis* breeds both ways. Now it is highly probable that there are minute eggs or ovula, of innumerable kinds of animalcules floating by myriads of myriads through the atmosphere, so diminutive as to bear no larger proportion to the eggs of the *aphis* than these bear to those of the wren or the hedge-sparrow; protected, at the same time, from destruction, by the filmy integument that surrounds them, till they can meet with a proper nest for their reception, and a proper stimulating power to quicken them into life; and which, with respect to many of them, are only found obvious to the senses in different descriptions of animal fluids.’

“It appears to us that it can be nothing more than a fancy, which is quite unsupported by evidence, to say that the eggs of any species of animalcules or insects float about in the atmosphere; for, independent of their weight, every known species being greatly heavier than air,) the parent insects of every species whose history has been accurately investigated, manifest the utmost anxiety to deposit their eggs upon or near the appropriate food of the young. To commit them to the winds would be a complete dereliction of this invariable law of insect economy. But admitting, for a moment, this hypothesis, that the eggs of insects are diffused through the atmosphere, the circumstance must be accompanied with two conditions,—the eggs must either be dropped by the parents while on the wing, or be carried off by winds from the terrestrial substances upon which they may have been deposited. On the supposition that the eggs are dropped by the mother insects while on the wing, we must also admit (for there is no avoiding it) that they continue to float about, unhatched, from the end of the summer to the commencement of spring, at which time only the broods make their appearance. Yet when we consider the rains, snows, and winds, to which they must be exposed for six or nine months, we think the hardest theorist would scarcely maintain that a single egg could outweather these vicissitudes, and continue to float in the air. It may not be out of place to remark that the female aphides, which deposit eggs in autumn, have no wings. Again, on the supposition that the eggs are deposited on plants, trees, and other objects, it is still more unlikely that they could be carried into the air; for, on exclusion, they are, with very few exceptions, enveloped in an adhesive cement which glues them to the spot on which they are deposited. When eggs are deposited singly, this cement usually envelopes each with a thin coating, as in the instance of the admi-

erable butterfly (*Vanessa Atalanta*); but when they are placed in a group, the cement is sometimes placed over the whole, as in the instance of the white satin moth (*Leucoma Salicis*, STEPHENS.) This cement is evidently intended by nature (who seldom accommodates her plans to our theories) to prevent the eggs from being carried from the place selected by the mother insect for their deposition. Those eggs, therefore, which are placed on the outside of substances, have this provision for their secure attachment to the locality chosen by the instinct of the mother. But, on the contrary, the principle does not always hold in the case of those deposited in nests and excavations, and particularly as to those of ants and termites. The working ants, indeed, carry the eggs from the top to the bottom of their galleries, according as the weather is favourable or unfavourable for hatching. The labourers of the white ants (*Termites*), again, attend their queen with the utmost care when she is laying; for, as she cannot then move about, they are under the necessity of carrying off the eggs, as they are laid, to the nurseries. The extraordinary labour which this requires in the community may be understood, when, according to Smeathman, she lays 60 eggs in a minute, which will amount to 86,400 in a day, and 31,536,000 in a year. The exceptions now mentioned, however, do not in the least invalidate our general position.

"Another no less remarkable circumstance is the great weight, or specific gravity of the eggs of insects. From numerous experiments, we may venture to say, that those of all the species we have tried sink rapidly in water the moment they are thrown into it, from the egg of the drinker moth (*Odonistis Polatoria*, GERMAN,) which is nearly as large as a hemp seed, to that of the rose-plant louse (*Aphis rosæ*), which is 'so small as to be barely visible to the naked eye. Some eggs of the gypsy moth (*Hypogymna dispar*, STEPHENS), indeed, floated in water, because they were covered with down. It is well known that the diffusion of many of the seeds of plants is accomplished by the winged down with which they are clothed; but the down upon the eggs of insects does not conduce to this end. Whether insect eggs be naked or covered with down, they are invariably, as far as their history has been investigated, deposited close to, or upon, substances capable of affording food to the young when hatched. In making experiments upon the specific gravity of eggs, it should be remembered that no infertile, or unimpregnated egg will sink; for having some hundreds of these, laid by different species of insects, in our cabinet, we found, upon trial, that they uniformly floated, while those which we knew to be impregnated, as uniformly sunk. A female, for example, of the rose-leaf roller (*Lozotonia Rosana*, STEPHENS) was reared by us, in solitude, under an inverted wine-glass, upon the side of which we glued a patch of eggs, of course unimpregnated; these, upon trial, all floated in water. But eggs of the same species, taken from the outside of a pane of glass close to a rose-tree, all sunk in water; and it is to be fairly presumed, as the parent of the latter was in a state of freedom, that these were impregnated. We found the same distinction to hold in the eggs of the drinker moth, the gypsy moth, and numerous other insects."

A most curious subject of inquiry in ento-

mology, is the final cause of the infinitely varied colours and forms of insect eggs. On the latter, the author states some very interesting facts. "We are accustomed to consider the form of eggs so nearly regular, that the epithet, 'egg-shaped,' is frequently applied to other things, and is well understood; but the eggs of insects, though most commonly round, are seldom, like those of birds, smaller at one end than at another, while they often exhibit forms never seen in the eggs of birds, such as cylindric, flat, depressed, compressed, prismatic, angular, square, boat-shaped, &c. These varieties of form are justly referred by Kirby and Spence to the 'manifold wisdom' of the Creator; but we have some hesitation in admitting their limitation of this to his 'will to vary forms, and so to glorify his wisdom and power, independently of other considerations,' and think it would be more truly philosophic to confess our ignorance, when we cannot explain what is above our comprehension. Paley, indeed, says such facts 'might induce us to believe that variety itself, distinct from every other consideration, was a motive in the mind of the Creator, or with the agents of his will;' but he immediately adds, 'to this great variety in organized life the Deity has given, or perhaps there arises out of it, a corresponding variety of animal appetites; and did all animals covet the same element, retreat, or food, it is evident how much fewer could be supplied and accommodated, than what at present live conveniently together, and find a plentiful subsistence.' The latter remark, we think, completely destroys the former; and it will lead us to what appears to be the true cause of the varied forms of the eggs of insects. The cause of the eggs of birds being nearly the same in shape, arises, we should say, from the similar forms of the animals themselves, while insects, being much more varied in shape, require corresponding varieties in the forms of their eggs. The ostrich, the eagle, and the wren, for example, differ much more in size than in their general form; but the ear-wig, the garden-spider, butterflies, beetles, and grasshoppers, differ much more in form than in size, and consequently require eggs of varying forms to contain their progeny. We confess, however, that we cannot always trace the mathematical cause of these diversities of form in the eggs of insects; for though there prevails a general resemblance in those families and groups the most nearly allied, yet in others, even the species of the same genus exhibit differences which cannot thus be accounted for. In two species of vanessa, for instance, the small and the giant tortoise-shell butterflies, which differ in little but size, the egg of the small is cylindric, with eight prominent ribs, while that of the great is shaped like a Florence flask, and quite smooth and uniform. The ribbing of the eggs of the small tortoise-shell butterfly, which is also found on most of the species, leads us to remark that insect eggs are frequently sculptured in a very beautiful manner, far outrivalling in elegance of design and delicacy of workmanship the engravings which we sometimes see on eggs brought from India and China."

The chapter on the voracity of caterpillars, grubs, and maggots, contains a great variety of interesting particulars, from which we select the following:—"Insects, in the early stage of their existence, may be compared to an Indian hunter, who issues from his hut, as they

do from the egg, with a keen appetite. As soon as he is successful in finding game, he gorges himself till he can eat no more, and then laying him down to sleep, only bestirs himself again to go through a similar process of gorging and sleeping; just so the larvæ of insects doze away a day or more, when casting their skins, and then make up for their long fast by eating with scarcely a pause. Redi ascertained by experiment that the maggot of the common blow-fly (*Musca carnaria*) becomes from 140 to 200 times heavier within twenty-four hours; and the cultivators of silk-worms know the exact quantities of leaves which their broods devour. 'The result,' says Count Dandolo, 'of the most exact calculations is, that the quantity of leaves drawn from the tree employed for each ounce of eggs, amounts to 1609 lbs. 8 oz., divided in the following manner:—

	Sorted leaves.		Refuse.	
	lbs.	oz.	lbs.	oz.
First age	6	0	1	8
Second age	18	0	3	0
Third age	60	0	9	0
Fourth age	180	0	27	0
Fifth age	1098	0	102	0
Per oz. of eggs of sorted leaves	1362	0	142	8
Refuse			142	8
Loss by evaporation, &c....			105	0
	lbs. 1609 8			

Making, however, certain deductions, we must conclude that, at least, the amount of leaves eaten by the caterpillars produced from one ounce of eggs, is upwards of 1200 lbs. ! A single silk-worm consumes, within thirty days, about 60,000 times its primitive weight !"

The wood engravings illustrative of this excellent little book are, if possible, even better than those which adorn the corresponding volumes. We have curtailed ourselves in our intended extracts, as the work itself, we know, will presently be in every body's hands, though ours is the only copy that has yet reached Ireland.

Lithotripsy, its applicability as an operation for the Cure of Stone; illustrated by a series of Cases. By W. B. Costello.

[UNPUBLISHED.]

THIS interesting and important improvement in Surgery is now beginning to attract universal attention. At a Meeting of the Royal Society on Thursday Evening the 20th inst. a paper was to have been read upon the subject, but was postponed until the evening of the 27th, in consequence of the length of some other proceedings, which necessarily took precedence of it. We have been favoured with a previous perusal of this paper, and are happy to be able thus to furnish our readers with the earliest intelligence on so important a subject. Mr. Costello is an Englishman, and has, till lately, been the colleague of the discoverer of this method, Dr. Civiale of Paris, conjointly with whom he has relieved a great number of persons, suffering from this malady. In France Lithotripsy has already taken its rank amongst surgical operations; and it is this gentleman's object "to endeavour to render this method of operation popular in England." Since his arrival in London, last July, several very remarkable cures have been effected by him.